



# CARBON MONOXIDE DETECTOR

## GD-530 SERIES USER'S MANUAL

### INTRODUCTION

Sentek's Carbon Monoxide Detector is effective for detecting any buildup of carbon monoxide, also known as CO gas, in your home or office. The features of your CO gas detector includes:

- (1) Easy to install. It allows connecting to fire control panel or security monitoring system.
- (2) Monitoring for carbon monoxide in a continuous manner.
- (3) Giving a loud alarm (85 dB) when it detects a buildup of carbon monoxide.
- (4) Self-testing its operative functions continuously.
- (5) Offering a 5-year warranty for the carbon monoxide sensing unit.

### YOU SHOULD KNOW ABOUT CARBON MONOXIDE

Carbon monoxide, also known as "CO" by the chemical form, is considered to be a highly dangerous poisonous gas, because it is colorless, odorless or tasteless and very toxic. In general, biochemistry phenomena have shown that the presence of CO gas inhibits the blood's capacity to transport oxygen throughout the body, which can eventually lead to brain damage.

In any enclosed space (home, office, recreational vehicle or boat) even a small accumulation of CO gas can be quite dangerous. Although many products of combustion can cause discomfort and adverse health effects, it is CO gas which presents the greatest threat to life.

Carbon monoxide is produced by the incomplete combustion of fuels such as natural gas, propane, heating oil, kerosene, coal, charcoal, gasoline, or wood. The incomplete combustion of fuel can occur in any device which depends on burning for energy or heat such as furnaces, boilers, room heaters, hot water heaters, stoves, grills, and in any gasoline powered vehicle or engine (e.g. generator set, lawnmower). Tobacco smoke also adds CO to the air you breathe.

When properly installed and maintained, your natural gas furnace and hot water heater do not pollute your air space with CO. Natural gas is known as a "clean burning" fuel because under correct operating conditions, the combustion products are water vapor and carbon dioxide (CO<sub>2</sub>), which is not toxic. The products of combustion are exhausted from furnaces and water heaters to the outside by means of a fuel duct or chimney.

Correct operation of any burning equipment requires two key conditions:

- (a) An adequate supply of air for complete combustion.
- (b) Proper venting of the products of combustion from the furnace through the chimney, vent or duct to the outside.

Typical carbon monoxide gas problems are summarized here:

- (a) Equipment problems, due to defects, poor maintenance, damaged and cracked heat exchangers
- (b) Collapsed or blocked chimneys or flues, dislodged, disconnected or damaged vents
- (c) Downdraft in chimneys or flues. This can be caused by very long or circuitous flue runs, improper location of flue exhaust or wind conditions
- (d) Improper installation or operation of equipment, chimney or vents
- (e) Air tightness of house envelop/inadequate combustion of air
- (f) Inadequate exhaust of space heaters or appliances
- (g) Exhaust ventilation/fireplace competing for air supply

Potential sources of carbon monoxide in your home or office include clogged chimney, wood stove, wood or gas fireplace, automobile and garage, gas water heater, gas appliance, gas or kerosene heater, gas or oil furnace, and cigarette smoke.

### POSSIBLE SYMPTOMS OF CARBON MONOXIDE POISONING

Carbon monoxide is colorless, odorless, tasteless, and very toxic. When inhaled, it produces an effect known as chemical asphyxiation. Injury is due to the combining of CO with the available hemoglobin in the blood, lowering the oxygen-carrying capacity of the blood. In the presence of CO gas, the body is quickly affected by oxygen starvation.

The following symptoms are related to CO poisoning and should be discussed with all members of the household so that you know what to look for:

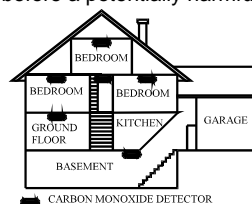
- (a) Extreme exposure: unconsciousness, convulsions, cardiorespiratory failure, death
- (b) Medium exposure: severe throbbing headache, drowsiness, confusion, vomiting, fast heart rate
- (c) Mild exposure: slight headache, nausea, fatigue (similar to "flu-like" symptoms)

Young children and household pets may be the first affected.

Exposure during sleep is particularly dangerous, because the victim usually does not awaken.

### LOCATIONS TO INSTALL YOUR ETECTOR

Since CO gas moves freely in the air, the suggested location is in or as near as possible to sleeping areas of the home. The human body is most vulnerable to the effects of CO gas during sleeping hours. For maximum protection, a CO detector should be located outside primary sleeping areas or on each level of your home. In the figure below, are suggested locations in the home. The electronic sensor detects carbon monoxide, measures the concentration and sounds a loud alarm before a potentially harmful level is reached.

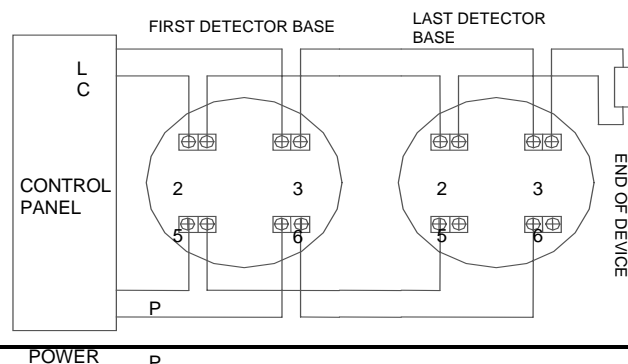


Do not place the detector in the following areas:

- (a) Where the temperature may drop below 40°F (4.4°C) or exceed 100°F (37.8°C)
- (b) Near paint thinner fumes
- (c) Within 5 feet (1.5 meter) of open flame appliances such as furnaces, stoves and fireplaces
- (d) In exhaust streams from gas engines, vents, flues or chimneys
- (e) Do not place in close proximity to an automobile exhaust pipe; this will damage the detector

### WIRING DIAGRAM FOR NB-983 SERIES CARBON MONOXIDE DETECTORS

Figure 2 shows the wiring diagram for NB-983 series carbon monoxide detectors.



## INSTALLING THE BASE OF DETECTOR

- (1) All the wires in the base compartment should be flattened and are not touched to any connectors to ensure that the detector head be smoothly fastened to the base.
- (2) When using the jump wires to check the connectivity for each gas detector in the circuit loop (e.g. connecting point 2 and point 3 with a jump wire as shown in Figure 3), be sure to remove all the jump wires before attaching the detector head onto the base.
- (3) Be sure that the components used in the circuit loop as shown in Figure 3 should be coupled up with those components used in the transceiver circuitry of the control panel.
- (4) The base is allowed to be installed within an available wiring box including octagon box (3", 3.5", or 4"), circular box (3") and rectangular box (4" long), without using any other additional mechanical adapters.

## INSTALLING THE DETECTOR HEAD

- (1) Align up the position of head to the base, see Figure 4.
- (2) Screw the detector head into the base in clockwise direction.

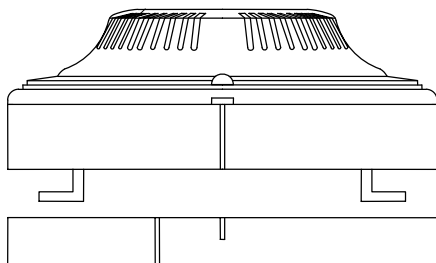


Figure 3 Alignment of detector head and its base

## MAINTENANCE OF CARBON MONOXIDE DETECTORS

A co detector constantly monitors any carbon monoxide under its normal operational conditions. The following maintenance procedures for gas detectors will assure its desired performance:

- (1) Use a vacuum cleaner to clean the dust around the vent holes of gas detector cover.
- (2) Carry out a regular or weekly test of gas detectors.

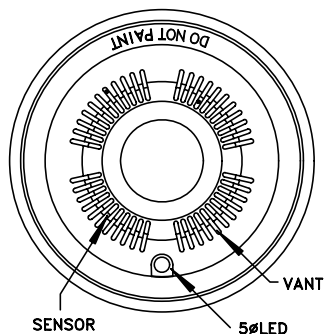


Figure 4 Front cover of detector head

## TYPES FOR DETECTOR SIGNALING

The carbon monoxide detector has to be warmed up for at least 10 minutes after being energized, then the test procedure can be followed. There are three types of detector signaling:

- (1) Green LED flashing indicates that the detector is in the normal monitoring condition.
- (2) When the carbon monoxide is detected, the green light will change to flashing of red LED light, accompanying the alarm sounds.
- (3) If the detector is not in normal operation, the buzzer will sound once every 30 seconds to indicate that the malfunction is detected by the built-in self-monitoring circuitry.

## ACTIONS TO TAKE WHEN ALARM SOUNDING

In case of harmful levels of CO gas being detected, your detector will go into a continuous full alarm. Try to take the following necessary actions immediately:

- (a) If there is anyone experiencing the effects of carbon monoxide poisoning such as headache, dizziness, nausea or other flu-like symptoms, call your fire department right away or 911. You should evacuate all the people in the premises immediately. Do a head count to check that everybody is accounted for.
- (b) Do not re-enter the premises until the problem has been corrected and the CO gas has been dispersed out and a safe level is reached.
- (c) If no symptoms exist, Immediately ventilate the home by opening windows and doors. Turn off fuel burning appliances and call a qualified technician or your utility company to inspect and repair your problem before restarting appliances.

**WARNING:** Normally an activation of the detector indicates the presence of CO gas. However, the CO gas can be extremely fatal, if it is not detected. The source of the CO gas may come from several possible situations, please refer to the list of sources of carbon monoxide in page 1.

**CAUTION:** This detector will only indicate the presence of CO gas at the sensor. However, you have to be aware that the CO gas may be present in other areas in the premises.

## ACTIONS TO TAKE AFTER THE PROBLEM BEING CORRECTED

Once the problem about the CO gas presence in the premises has been corrected, the alarm of the detector should be off. After waiting for 10 minutes, push the Test button to test the detector so that you can make sure that the detector is working properly again

## SPECIFICATION:

Gas Monitored	CO
Operating Voltage	12Vdc or 24Vdc
Sensitivity	100ppm within 90 minutes 200ppm within 35 minutes 400ppm within 15 minutes
Alarm Sounds	85dB
Operating Temp(°C)	0°C~40°C
Power Consumption	3W
Output Voltage	With Relay Output (Dry connection output)

## WARNING AND LIMITATION

Note that GD-530 series gas detector is not supposed to be used as smoke detector or fire alarm. In addition, this detector should not be installed in a "danger area" as defined by National Electrical Code. A gas detector will operate normally under regular power supply, therefore, it will not perform at any situation when power outage occurs.

## WARRANTY INFORMATION

Under the normal operation conditions, the manufacturer provides five-year warranty for the sensor head of gas detector and one-year warranty for other parts for repairing without charge. Part and labor charge will be required after the warranty is expired.